

6-17-03
12.38.8

Material Safety Data Sheet

NUCOR

Mill Scale

PRODUCT AND COMPANY IDENTIFICATION

Product Identity: Mill ScaleGeneral Product Description: Mill ScaleMSDS NUMBER: Not AssignedCompany: Product Information Telephone Number: (704) 366-7000

Transportation Emergencies: CHEMTREC (800) 424-9300 (U.S.) / (703) 527-3887 (International)

Nucor Locations

Nucor Steel - Arkansas
7301 E. County Road 142
Blytheville, Arkansas 72315
Safety Officer: (870) 762-2100
(8:00 am - 5:00 pm)

Nucor Steel - Indiana
4537 South Nucor Road
Crawfordsville, IN 47933
Safety Officer: (765) 364-1323
(8:00 am - 5:00 pm)

Nucor Steel - Texas
U.S. Highway 78 South
Jewett, Texas 76848
Safety Officer: (803) 828-4481
(8:00 am - 5:00 pm)

Nucor Steel - Decatur
4301 Iverson Blvd.
Trinity, Alabama 35673
Safety Officer: (256) 301-3541
(8:00 am - 5:00 pm)

Nucor Steel - Kankakee
972 East 4500 North Road
Bourbonnais, IL 60914
Safety Officer: (815) 947-8000
(8:00 am - 5:00pm)

Nucor Steel - Berkeley
1455 Hagan Avenue
Huger, South Carolina 29450
Safety Officer: (843) 336-8229
(8:00 am - 5:00 pm)

Nucor Steel - Nebraska
2811 East Nucor Road
Norfolk, Nebraska 68702
Safety Officer: (402) 644-0200
(8:00 am - 5:00 pm)

Nucor Steel - Utah
West Cemetery Road
Plymouth, Utah 84330
Safety Officer: (435) 458-2300
(8:00 am - 5:00 pm)

Nucor Steel - Hertford
1505 River Road
Colfield, N.C. 27822
Safety Officer: (252) 356-3700
(8:00 am - 5:00 pm)

Nucor Steel - Jackson
3630 Fourth Street
Flowood, MS 39209
Safety Officer: (601) 938-1623
(8:00 am - 5:00pm)

Nucor Steel - Darlington
300 Steel Mill Road
Darlington, S.C. 29540
Safety Officer: (843) 393-5841
(8:00 am - 5:00 pm)

Nucor Steel - New York
25 Quarry Road
Auburn, N.Y. 13021
Safety Officer: (315) 253-4561
(8:00 am - 5:00 pm)

Nucor Yamato Steel
Intersection Hwy 18 East
Blytheville, Arkansas 72318
Safety Officer: (870) 762-5500
(8:00 am - 5:00 pm)

Nucor Steel - Birmingham
2301 F.L. Shuttlesworth Drive
Birmingham, Alabama 35234
Safety Officer: (205) 252-8777
(8:00 am - 5:00 pm)

Nucor Steel - Seattle
2424 SW Andover
Seattle, WA 98106
Safety Officer: (206) 933-2222
(8:00 am - 5:00 pm)

USEPA SF



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COMPOSITION INFORMATION ON INGREDIENTS

INGREDIENTS	CAS #	Percentages
Iron Oxide (Fe ₂ O ₃)	1309-37-1	50 - 99
Calcium Oxide (CaO)	1305-78-8	0 - 1.4
Aluminum (Al)	7429-90-5	0 - 0.01
Antimony (Sb)	7440-36-0	<1
Arsenic (As) [†]	7440-38-2	<1
Beryllium (Be)	7440-41-7	<1
Boron (B)	7440-42-8	<1
Cadmium (Cd) [†]	7440-43-9	<1
Carbon (C)	7440-44-0	0.04 - 0.95
Chromium (Cr)	7440-47-3	0.01 - 1
Cobalt (Co)	7440-48-4	<1
Copper (Cu)	7440-50-8	0.04 - 1
Lead (Pb) [†]	7439-82-1	0 - 0.9
Magnesium (Mg)	7439-95-4	0 - 1
Manganese (Mn)	7439-96-5	0.2 - 2
Molybdenum (Mo)	7439-98-7	0.01 - 0.8
Niobium (Nb)	7440-03-1	0 - 1
Nickel (Ni)	7440-02-0	0.01 - 1
Phosphorus (P)	7723-14-0	0 - 1
Selenium (Se)	7782-49-2	<1
Silicon (Si)	7440-21-3	0 - 1
Sulfur (S)	7446-09-5	0 - 1
Tin (Sn)	7723-14-0	0 - 1
Tungsten (W)	7440-33-7	0 - 1
Vanadium (V)	7440-62-2	0 - 1
Zinc (Zn)	7440-66-6	0 - 0.01

[†] These substances are specifically regulated under OSHA. See "Regulatory Information" section for Code of Federal Regulations citations.

Steelmaking Mill Scale is composed predominantly of oxides of iron with trace amounts of other metals and inorganic salts the composition of which can change due to changes in feedstock and the method used for manufacturing steel.

HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW

Black to reddish brown, powder, granular solid or aggregate with no appreciable odor. Irritant, possibly corrosive. Toxic, possibly poisonous. Carcinogen, reproductive toxin, embryotoxin, fetotoxin, teratogen. Sensitizer.

MSDS: Mill Scale - continued**POTENTIAL HEALTH EFFECTS**

ROUTES OF EXPOSURE: Skin Contact, Eye, Inhalation.

IMMEDIATE EFFECTS

SKIN (CONTACT AND ABSORPTION): May cause mechanical or chemical irritation, redness and pain. Contains Nickel, beryllium and cobalt which may cause sensitization reactions to those previously exposed. Contains arsenic which may cause hyperpigmentation of the skin.

EYES: May cause mechanical or chemical irritation, tearing, redness and pain. Contains arsenic which may damage the conjunctiva.

INHALATION: May cause irritation, coughing and damage to the lung. Components of this product may cause metal fume fever, a condition with flu-like symptoms: weakness, fever, headache, chills, sweating, muscular pain with the possible development of pulmonary edema and death. Contains extremely toxic substances (arsenic, lead and cadmium for example) that could cause poisoning and death at low exposures. Arsenic component may damage the lymphatic system. Lead may damage blood forming organs, kidneys and central nervous system. Cobalt is a respiratory sensitizer and may trigger asthma like attacks in those previously exposed. Exposure to Beryllium may cause epistaxis, bronchitis, pneumonitis (possible fatal), fever, rales and substernal pain.

INGESTION: Not expected to be a normal route of exposure. Ingestion may cause irritation, abdominal pain and nausea. Ingestion of significant amounts may cause damage to the esophagus, stomach and intestinal tract and effects as described under "Delayed / Long Term Effects". Contains extremely toxic substances (arsenic, antimony, lead and cadmium for example) that could cause poisoning and death at low exposures. Arsenic component may damage the esophagus, digestive tract, lymphatic system, liver, kidneys and lungs. Cadmium component may damage the lung, liver, kidney and prostate. Lead may damage blood forming organs, kidneys and central nervous system.

DELAYED / LONG TERM EFFECTS

CHRONIC EXPOSURE: No product specific data. Chronic or long term exposure may cause metal fume fever, the effects of which are described under inhalation - Immediate effects.

Chronic cadmium exposure may result in lung and prostate cancer, kidney damage, pulmonary emphysema, bone disease, teeth discoloration and loss of smell.

Chronic exposure to nickel can cause a sore or a hole in the septum of the nose. Nickel is also a sensitizer so repeated contact may result in sensitization reactions in those repeatedly exposed.

Long term inhalation exposure to iron has resulted in mottling of the lungs, visible on x-rays, a condition referred to as siderosis. This is considered a benign pneumoconiosis and does not ordinarily cause significant physiological impairment. Long term eye exposures may stain the eyes and leave a "rust ring". Long term inhalation of Tin will also result in a benign pneumoconiosis.

Chronic exposure to lead may result in plumbism which is characterized by a lead line in the gum, headache, muscle weakness and mental changes.

Chronic exposure to antimony may damage respiratory and cardiovascular systems.

CARCINOGENIC EFFECTS:

Cadmium component listed as a carcinogen by IARC (Group 1) and NTP (Known). Nickel has been shown to cause tumorigenic effects in animal testing is listed by IARC (Group 2B), NTP (Reasonably Anticipated to be a Human Carcinogen). Nickel Compounds have been listed by IARC (Group 1) and NTP (Reasonably Anticipated to be a Human Carcinogen). Arsenic is listed by IARC (Group 1), NTP (Known).

MSDS: Mill Scale - continued

Beryllium is listed by IARC (Group 1), NTP (Group 2- Reasonably anticipated), ACGIH (A1)
Chromium (VI) is listed by IARC (Group 1), NTP (Known) however, Chromium metal is listed by IARC as (Group 3-
Unclassifiable) and may cause tumors.
Cobalt is listed on IARC (Group 2B), ACGIH (A3 - animal carcinogen) and OSHA (possible select carcinogen)

REPRODUCTIVE EFFECTS:

Exposure to cadmium may cause reproductive, embryotoxic, fetotoxic, mutagenic and teratogenic effects.
Exposure to nickel may cause reproductive and fetotoxic effects.
Exposure to arsenic may cause reproductive, embryotoxic, fetotoxic, mutagenic and teratogenic effects.
Exposure of laboratory animals to high levels of copper have shown reproductive effects.
Exposure to lead may cause reproductive effects. Lead penetrates the placental barrier and may cause neurological disorders in infants.

TARGET ORGAN EFFECTS: EYE, LUNG, RESPIRATORY TRACT, BLOOD, LIVER, KIDNEY, SKIN, PROSTATE, LYMPHATIC SYSTEM, DIGESTIVE TRACT, ESOPHAGUS, REPRODUCTIVE SYSTEMS

SIGNS AND SYMPTOMS OF OVEREXPOSURE: COUGHING, IRRITATION TO THE EYE, SKIN OR RESPIRATORY OR ESOPHAGEAL TRACT.

FIRST AID MEASURES**FIRST AID PROCEDURES**

INGESTION (SWALLOWING): If appreciable quantities are swallowed, seek medical attention.
INHALATION (BREATHING): Remove to fresh air if symptoms of respiratory distress occur from dust inhalation. If irritation continues, seek medical attention.
SKIN CONTACT: Wash affected area with soap and water. Consult physician if irritation continues.
EYE CONTACT: Flush with water for 15 minutes. Seek medical attention.

FIRE FIGHTING MEASURES**FLAMMABLE PROPERTIES**

FLASH POINT (Closed Cup): Not Applicable.
UPPER FLAMMABLE LIMIT: Not Applicable **LOWER FLAMMABLE LIMIT:** Not Applicable
AUTOIGNITION TEMPERATURE: No Information
FLAMMABILITY CLASSIFICATION: Not applicable.

HAZARDOUS PRODUCTS OF COMBUSTION: Will not support combustion. However, if involved in a fire may give off toxic metal vapors or fumes.

UNUSUAL OR UNIQUE FIRE PROPERTIES: None.

EXTINGUISHING INFORMATION

EXTINGUISHING MEDIA: Use media suitable for surroundings
SPECIAL FIREFIGHTING PROCEDURES: Not applicable.

ACCIDENTAL RELEASE MEASURES

CONTAINMENT, CLEAN-UP PROCEDURES: Product is a solid. Shovel up and reuse or dispose of properly. Pick up dusts with broom, dustpan or shovel. Avoid making dust.

HANDLING AND STORAGE

HANDLING: After handling wash hands with soap and water.

STORAGE: No special handling required.

EXPOSURE CONTROLS AND PERSONAL PROTECTION

ENGINEERING CONTROLS

GENERAL VENTILATION: General room ventilation is adequate for processing that does not generate dusts or fumes.

LOCAL EXHAUST: For processes that generate dusts or fumes, a local exhaust system is recommended.

PERSONAL PROTECTIVE EQUIPMENT (PPE)

EYE AND FACE PROTECTION: Safety glasses with side shields for normal use.

SKIN PROTECTION: Under normal use, wear work gloves to prevent direct skin contact.

RESPIRATORY PROTECTION: A respiratory protection program that meets OSHA's 29 CFR 1910.134 or ANSI Z88.2 requirements must be followed whenever workplace conditions warrant respirator use. Where unknown concentrations are encountered or during an emergency, use NIOSH approved supplied air respirator.

EXPOSURE GUIDELINES

Iron Oxide (as Fe)- OSHA: 10 mg/m³, ACGIH: 5 mg/m³

Calcium Oxide- OSHA: 5 mg/m³, ACGIH: 2 mg/m³

Antimony (as Sb)- OSHA: 0.5 mg/m³, ACGIH: 0.5 mg/m³

Arsenic - OSHA: 0.01 mg/m³ [Inorganic], ACGIH: 0.01 mg/m³

Beryllium (as Be) - OSHA: 0.002 mg/m³ TWA, C 0.005 mg/m³; 30 min peak 0.025 mg/m³

Boron (as Boron Oxide) - OSHA: 15 mg/m³; ACGIH: 10 mg/m³

Cadmium - OSHA: 0.005 mg/m³, ACGIH: 0.01 mg/m³ i, 0.002 mg/m³ R

Chromium - OSHA: 1 mg/m³, ACGIH: 0.5 mg/m³

Cobalt (as Co) - OSHA: 0.1 mg/m³; ACGIH: 0.02 1 mg/m³ BEI

Copper - OSHA: 1 mg/m³, ACGIH: 1 mg/m³

Copper Fume - OSHA: 0.1 mg/m³, ACGIH: 0.2 mg/m³

Lead (as Pb) - OSHA: 0.05 mg/m³; ACGIH: 0.05 mg/m³ BEI

Manganese Oxide (as Mn)- OSHA: C 5 mg/m³, ACGIH: 0.2 mg/m³

Manganese Fume (as Mn)- OSHA: C 5 mg/m³, ACGIH: 0.2 mg/m³

Molybdenum (as Mo)- OSHA: Not Established; ACGIH: TWA 10 mg/m³ i, 3 mg/m³ R

Nickel - OSHA: 1 mg/m³, ACGIH: 1.5 mg/m³ i

Phosphorus (as pentoxide) - Not Established

Selenium (as Se)- OSHA: 0.2 mg/m³; ACGIH: 0.2 mg/m³

Silicon - OSHA: 5 mg/m³**, 15 mg/m³*, ACGIH: 10 mg/m³

Tin (Metal) - OSHA: 2 mg/m³; ACGIH: 2 mg/m³

Tungsten (and insoluble compounds as W) - OSHA: Not Established, ACGIH: 10 mg/m³

* means Total Dust, ** means Respirable Fraction of Dust, C means Ceiling, i means Inhalable, R means Respirable
BEI means "Biological Exposure Index" (ACGIH)

PHYSICAL AND CHEMICAL PROPERTIES

ODOR: None.

pH (aqueous solution): >11

PHYSICAL STATE: Black to reddish brown powder, granular or aggregate.

MELTING POINT: Not known.

MSDS: Mill Scale - continued

DENSITY: 2.2 typical

SOLUBILITY IN WATER: Partially soluble

STABILITY AND REACTIVITYSTABILITY: Stable.HAZARDOUS POLYMERIZATION: Will not occurINCOMPATIBILITY: Avoid contact with strong acids.HAZARDOUS DECOMPOSITION PRODUCTS: Under fire conditions, product may release toxic metal oxide fumes.OTHER: None.**TOXICOLOGICAL INFORMATION**TOXICITY TEST DATA: No product specific information.IRRITATION: No product specific information. May cause mechanical or chemical irritation.

CHRONIC EXPOSURE: No product specific data found. Long term inhalation exposure to iron has resulted in mottling of the lungs, visible on x-rays, a condition referred to as siderosis. This is considered a benign pneumoconiosis and does not ordinarily cause significant physiological impairment. Long term eye exposures may stain the eyes and leave a "rust ring". Long term inhalation of Tin will also result in a benign pneumoconiosis.

Chronic cadmium exposure may result in lung and prostate cancer, kidney damage, pulmonary emphysema, bone disease, teeth discoloration and loss of smell. Exposure to cadmium may also cause reproductive, embryotoxic, fetotoxic, mutagenic and teratogenic effects.

Chronic exposure to nickel can cause a sore or a hole in the septum of the nose. Chronic exposure to lead may result in accumulation of lead in the body resulting in headache, muscle weakness and mental changes.

Chronic exposure to lead may result in plumbism which is characterized by a lead line in the gum, headache, muscle weakness and mental changes.

Chronic exposure to antimony may damage respiratory and cardiovascular systems.

See also: Hazards Identification Section - Delayed /Long Term Effects.

SENSITIZATION: Sensitizer. Contains Nickel, Beryllium and Cobalt, all are sensitizers.

CARCINOGENICITY: Contains Known Carcinogens: contains cadmium, beryllium, cobalt, nickel, arsenic and chromium.

REPRODUCTIVE TOXICITY: Contains substances known to cause reproductive effects (cadmium, nickel, lead, arsenic, copper). See Hazards Identification Section - Reproductive Effects.

RADIATION: This product is normally free of radiation.

ECOLOGICAL CONSIDERATIONS

TOXICOLOGICAL INFORMATION: Some of the components of this product may be environmentally toxic. Do not release to surface waters. Control dust and fume formation.

DISPOSAL CONSIDERATIONS

MSDS: Mill Scale - continued

Please note that the following information pertains only to the unused, uncontaminated material.

RCRA CLASSIFICATION: Not considered a hazardous waste under RCRA 40 CFR 261. See table under REGULATORY INFORMATION section.

U.S. EPA HAZARDOUS WASTE NUMBER: Not Applicable.

DISPOSAL RECOMMENDATIONS: Reuse and recycle whenever possible. Unusable material may be disposed of with normal waste.

TRANSPORTATION

Ground: Proper Shipping Name: Not Regulated
UN/NA Number: Not Regulated

Labels/Markings: Not Regulated

Overwater: Proper Shipping Name: Not Regulated
UN/NA Number: Not Regulated

Labels/Markings: Not Regulated

Air: Proper Shipping Name: Not Regulated
UN/NA Number: Not Regulated

Labels/Markings: Not Regulated

Other (MARPOL / Carrier Specific): None

REGULATORY INFORMATION

TSCA Statutes: On TSCA.

SARA Title III Section 302/304: See Table Below

SARA Title III Section 311/312: ACUTE: Y CHRONIC: Y FIRE: N REACTIVE: N SUDDEN RELEASE: N

SARA Title III Section 313:

Chemical Name	CAS Number	Concentration (w %)	SARA 313 Chemical	CERCLA RQ (lbs)
Aluminum	7429-90-6	0-0.01	x-fume or dust	na
Antimony	7440-36-0	<1	x	5000
Arsenic	7440-38-2	<1	x	1
Beryllium	7440-43-9	<1	x	10
Boron	7440-42-8	<1	na	na
Cadmium	7440-43-9	<1	x	10
Calcium	7440-70-2	0 - 1.4	na	na
Carbon	7440-44-0	0.04-0.95	na	na
Chromium	7440-47-3	0.01-1	x	5000
Cobalt	7440-48-4	<1	x	na
Copper	7440-50-8	0.04-1	x	5000
Iron	7439-89-6	50 - 99	na	na
Lead	7439-92-1	0-0.9	x	10
Magnesium	7439-95-4	0-1	na	na
Manganese	7439-96-5	0.2-2	x	na

MSDS: Mill Scale - *continued*

Molybdenum	7439-98-7	0.01-0.8	na	na
Nickel	7440-02-0	0.01 - 1	x	100
Niobium	7440-03-1	0-1	na	na
Phosphorus	7723-14-0	0-1	x	1
Selenium	7782-49-2	<1	x	100
Silicon	7440-21-3	0-1	na	na
Sulfur	7704-34-9	0-1	na	na
Tin	7723-14-0	0-1	na	na
Tungsten	7440-33-7	0-1	na	na
Vanadium	7440-62-2	0-1	x-except when contained in an alloy	na
Zinc	7440-66-6	0-0.01	x-fume or dust	1000

OSHA: The following components of this product are specifically regulated under OSHA. Refer to the Code of Federal Regulations (CFR) citations [available on the internet or in many public libraries] cited below for specific information regarding Personal and Respiratory Protection Equipment, Exposure and Medical Monitoring and other essential information.

Arsenic 29 CFR 1910.1018
Cadmium 29 CFR 1910.1027
Lead 29 CFR 1910.1025

Additional chemical specific information may also be found on the OSHA web page on the internet:
<http://www.osha.gov>

NJ Right to Know: Calcium Oxide (1305-78-8), Cadmium [Dust and Fume], Aluminum (1344-28-1), Antimony (7440-36-0), Arsenic (7440-38-2), Beryllium (7440-41-7), Boron (7440-42-8), Chromium (7440-47-3), Cobalt (7440-48-4), Copper (7440-50-8), Lead (7439-92-1), Manganese (7439-96-5), Nickel (7440-02-0), Phosphorus (7723-14-0), Selenium (7782-49-2), Vanadium (7440-62-2)

PA Right to Know: Iron Oxide (1309-37-1), Boron (Oxide) (1303-86-2), Calcium (7440-70-2), Calcium Oxide (1305-78-8), Cadmium [Dust and Fume], Aluminum (1344-28-1), Antimony (7440-36-0), Arsenic (7440-38-2), Beryllium (7440-41-7), Boron (7440-42-8), Chromium (7440-47-3), Cobalt (7440-48-4), Copper (7440-50-8), Lead (7439-92-1), Magnesium (7439-95-4), Manganese (7439-96-5), Nickel (7440-02-0), Phosphorus (7723-14-0), Selenium (7782-49-2), Silicon (7440-21-3), Sulfur (7704-34-9), Tin (7723-14-0), Tungsten (7440-33-7), Vanadium (7440-62-2)

California Safe Drinking Water Act (Proposition 65): This product contains the following substances known to the State of California to cause cancer: Arsenic (inorganic arsenic compounds), Beryllium, Chromium (hexavalent compounds), Cobalt, Nickel and certain nickel compounds, or reproductive harm: Arsenic (inorganic arsenic compounds), Cadmium, Lead.

OTHER INFORMATION

	NFPA 704		HMIS ^{III}
	1		1
	0		0
Reactivity	0	Reactivity	0

PREPARED BY: EHS Technical

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Page 8 of 8

Last Update: 6-17-03